United States
Department of
Agriculture

Economic
Research
Service

Long Range Information Management Plan

Fiscal Years 1984 to 1988

PREFACE
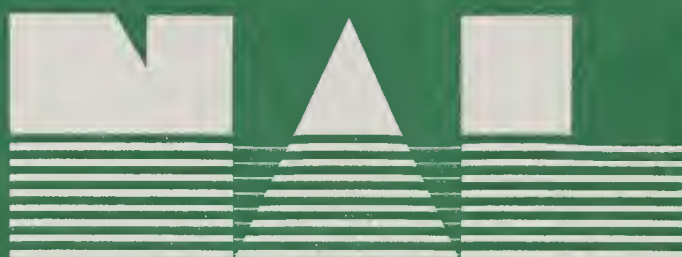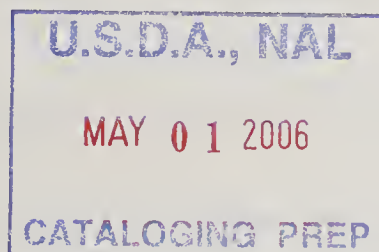
This document summarizes the results of a comprehensive planning activity conducted within the Economic Research Service from April to September 1983. Starting in 1983, each Agency within the Department of Agriculture was charged with producing a five year information management plan, and updating it annually. These plans form the basis of the Department's long range information resource management plan, and will be used to guide decisions on policy, personnel and procurements. The Administrator of the Economic Research Service has directed that this plan be circulated widely within ERS and to other interested parties both inside and outside of the Agency.

This document was prepared by the Information Management Planning Committee. The members of the committee are: Byron Berntson, Ben Blankenship, Robert Bohall, Tom Hady, Gene Mathia, and Robert Rovinsky (Chairman).

Note: This is the first edition of a document which will be reviewed and updated at least annually. Comments and suggestions are welcome and should be directed to the committee chairman.

November 1983

ACKNOWLEDGMENTS

ECONOMIC RESEARCH SERVICE

LONG RANGE INFORMATION MANAGEMENT PLAN

FY84 - FY88

Executive Summary

The mission of the Economic Research Service is to provide timely and reliable agricultural, natural resource, and rural economic and social information. The research and analysis, forecasts, economic indicators, and data are developed to assist decisionmaking by farmers, agribusiness, Government, and the general public.

Information management in all its forms, including the collection, analysis, creation, and dissemination of economic information, is central to meeting the Agency mission. This five year plan provides an Agency wide strategy which will be used to guide planning and procurement decisions at all organizational levels. It will provide a framework for securing USDA technical and administrative approval of future procurement actions needed to implement the required systems.

The plan sets out strategies for accomplishing major goals and objectives. For each objective, major milestones have been identified and starting and completion dates have been proposed. The required staff years, staff costs, and all other costs are estimated by fiscal years for 1984 through 1988. These are summarized in Table A-1. These requirements will be reviewed annually and revised as necessary to consider progress on each item and available resources.

The major goals and objectives include:

o Increase productivity and program effectiveness through more efficient use of information resources.

o Provide improved user services in terms of responsiveness and quality.

o Improve capabilities and coordination through automation, integration and the use of interactive systems.

o Support ERS long range planning in such areas as data, models and
   projections, situation and outlook, and research and staff analysis
   through automated information management and state-of-the-art
   technology.

o Improve and/or expand the existing computer resources available to ERS.

o Integrate most word and data processing functions, and use these
   technological advances to improve productivity.

o Replace the Agency's current time-series database by a centralized
   database, ARIES.

o Develop standards for data documentation and guidelines for what data
   will be included in Agency databases.

o Achieve effective data sharing in ERS.

o Explore the feasibility and design of alternatives for handling ERS'
   extensive cross-sectional and hierarchical databases.

o Give researchers in ERS interactive access to the full capabilities of
   Agency database(s) via microcomputer and minicomputers.

o Increase capability in the area of electronic dissemination of
   information.

o Develop an improved integrated Management Information System for use by
   Division and Agency management.

o Improve the existing hard copy publication process and use integrated
   word and data processing systems to reduce publication time and cost.

o Improve the Agency's capabilities in the areas of presentation and
   publication quality graphics.

o Provide staff with electronic access to the Agency's information
   management system.

This plan represents considerable staff time and major capital investments,
for purchase of graphics, microsystems, telecommunications, and publications
equipment. A capital account will be established to fund Agency wide
procurements.

Economic Research Service
Information Management Long Range Plan

Contents

A. Background/Summary

1. Introduction

The purpose of this section is to provide both a short background statement on the history and evolution of ERS' information management planning efforts, and a summary of the goals, strategies, and objectives discussed in the sections below. While these sections contain specific information, a summary has been added to provide a perspective on ERS' planning efforts - to "see the forest as well as the trees". To aid decisionmakers within ERS, the following have also been added: a summary of the objectives and goals by general subject matter; a table of total resources required; and a set of recommendations on how the plan may be implemented. A year by year breakdown of the plan, with major milestones, is contained in the Appendix to this plan.

We want to emphasize two important points about this plan. First, while considerable time, resources, and commitment have gone into this first planning activity, we do not regard it as a finished product, but as a dynamic, changing one. The plan will be reviewed at regular intervals during each year, and modified as needed. This review process will allow ERS to incorporate new and better technology than was perhaps available at the time an objective was first developed. Further, experiences with the plan, changes in available resources, mission changes, and other organizational constraints may also require adjustments in objectives, strategies, or timing. In particular, the Agency's move to new space (planned in FY84) should involve delays of one to three months in all work plans.

The second point concerns resources required for this plan. The resources given in this plan do not include all current or future resources required for information management within ERS. For many information management areas in ERS (including word processing, large scale modeling, and much of the current development and maintenance of software systems) any changes are dependent upon decisions made during FY84, as specified by this plan. In other areas little change is required or expected. The plan therefore contains only resource requirements in areas where changes could be projected and milestones could be given. The paragraphs on resources below, and Section B on ERS' current situation, should be consulted for more detail.

2. Agency Mission

The mission of the Economic Research Service is to provide timely and reliable agricultural, natural resource, and rural economic and social information. The research and analysis, forecasts, economic indicators, and data are developed to assist decisionmaking by farmers, agribusiness, Government, and the general public.

Many of the Agency's activities are carried out in cooperation with other publicly funded research institutions - principally other Federal agencies and State universities. Federal agencies providing information to or requesting work from ERS include the Statistical Reporting Service, Soil Conservation Service, Foreign Agricultural Service, Farmers Home Administration, Food and Nutrition Service, Forest Service, Agricultural Marketing Service, Office of International Cooperation and Development, Environmental Protection Agency, and the Agency for International Development.

Much of the work of ERS is on domestic agriculture and food and is conducted by the National Economics Division - the capacity of the Nation to produce; supply or production response to changes in agricultural prices; evaluation of alternative commodity policies; the financial and income status of U.S. farmers; changes in domestic demand; outlook forecasting; databases and modeling. Work on the world's capacity to produce and consume is conducted by the International Economics Division - foreign country policies that affect our agricultural exports; changes in foreign demand; longrun export strategies; databases and modeling.

Work on natural resources, environmental quality and production inputs is conducted by the Natural Resource Economics Division - land and water resource development, management, and conservation; land values; air and water quality; supply and demand for production inputs and their productivity; database and modeling. Finally, the ERS programs devoted to rural development are conducted by the Economic Development Division - analysis of changes in population, income, and employment; rural community facilities and services; and the economic impacts of rural growth and development patterns.

The Data Services Center provides a wide range of data processing services to the four research divisions above, including overall applications support, database management and development, and the provision and maintenance of an extensive set of information processing resources. Also the Information Division of the Economics Management Staff (EMS) provides support to ERS in all areas of public information dissemination.

3. Background/History

Economic and social information, consisting of research, forecasts of major agricultural economic indicators, policy analysis, and data, is a principal product as well as a resource of ERS. This information comes in all forms-- verbal, printed, electronic, and visual-- and assists decisionmaking by farmers, agribusiness, government officials, and the general public. ERS' information management planning is an integral part of its long-range planning.

The importance of carefully managing ERS' extensive information resources has been recognized many times in recent years. In 1980 an Agency Data Management Plan was approved, which had as its focus the building of a centralized Agency Database. In 1981-1982 two Agency task forces extensively discussed the issues of microcomputer and word processing use in ERS, and guidelines produced by these committees were used in subsequent procurement actions. Individual Divisions have also set up task forces to assess and provide guidance on various aspects of their information management. What was lacking was an organized approach which would consider at one time the totality of information resources and the need for compatibility, and provide Agency-wide direction or policy.

ERS Information Management planning actually began more than a year ago, with the formation of an ADP Policy Committee by the Administrator. This committee, consisting of the Director of Data Services, the Agency Senior IRM official, three Division Directors, and two technical specialists, met for almost one year and considered a wide range of policy and planning issues related to data and word processing. They produced an ERS ADP Policy Statement, which the Administrator accepted, with revisions, in early 1983. Its goals and suggested strategies formed the basis for the present plan.

Shortly after OIRM formally launched the planning process (April 1983), an Information Management Planning committee was formed. It consists of one senior manager from each of the Economic Divisions, and the Deputy Director of Data Services. The Director of the Information Division in the Economic Management Staff (EMS) and the ERS Senior IRM official serve as ad hoc members. The committee received its charge from the Administrator, the Associate Administrator, and the ADP Policy Committee and has stayed in close touch with these individuals. It also retained a management consultant to advise and assist in meeting its tight deadlines.

The committee set several goals: First, to produce a useful Information Management Plan for ERS; second, to produce the required IRM plan by October 1983; and thirdly and most importantly, to begin a viable planning process within ERS that would allow the Agency to more productively manage its considerable information resources and improve its information products. In support of these aims, the following tasks were completed:

   a. A preliminary analysis was conducted of ERS' information management requirements, through a series of in-depth interviews with selected managers and staff in ERS and EMS.

   b. Goals and objectives were formulated as part of an ERS five-year information management plan.

   c. A timetable was developed for major decisions and steps required for the realization of the plan's objectives and recommendations for implementing the plan developed and presented.

The planning process was found to be a very useful one, and to justify the considerable resources and time required. There is a recognition, however, that it will be far more difficult to "work the plan" than to "plan the work", and continued commitment, effort, and resources will be required if the goals and objectives mentioned below are to be realized.

4. General Approach

The objectives and goals developed below are part of a general strategy for applying current and emerging technology to achieve the maximum benefit for ERS. One of the key objectives of this plan is to provide ERS staff with access to the Agency's information base by FY88. To accomplish this, an integrated system is envisioned which will support functions such as analysis, word processing, data processing, office automation, information retrieval and dissemination of information. The system would probably be based on a series of compatible, menu-driven programs utilizing a centralized database for common shared-use data and unique smaller databases for individual users. It would have the ability to transfer data and information between databases through a network and/or distributive system.

The proposed system not only will serve to meet needs internal to ERS but will also support electronic dissemination of information within USDA, to other Government Agencies and to the public. Further, it could support the administrative functions of ERS including summarized and detailed management information; personnel records and actions; travel arrangements, scheduling, and reports; budget and financial planning information; training; etc. And, in its final configuration, the system would be expected to provide the means of generating both text and graphics directly into camera-ready copy for publication. It will thus provide ERS staff with the ability to instantly access relevant information and thus improve the responsiveness and accuracy of information derived from the Agency's efforts.

It is recognized that systems developed for individual staff, specific Branches or Divisions will have different features tailored to their needs. Thus the systems developed for the Agency will be based on communicating, flexible systems wherever possible. Finally, it should be noted that ERS currently has major initiatives in the area of database development, microcomputer procurement, word processing, and graphics, and the plan envisioned below has been designed to use and complement these initiatives as much as possible.

Because development and implementation will continue for several years and will require very careful and detailed planning, several phases have been identified that will break the development and implementation into more manageable portions. These are:

a. Developing a Plan of Action with specific milestones.

b. Conducting a requirements analysis to define all the needs associated within the proposed scope of this plan.

c. Identifying and resolving the principal policy issues, and developing standards and guidelines.

d. Developing a conceptual system design for Information Management specifying discrete subsystems and defining the functional specifications of component equipment, facilities, personnel and other needed resources.

e. Establishing a capital account for procurement of capital investment equipment associated with ERS-wide Information Management needs.

f. Developing a detailed Implementation Plan that calls for the phased introduction of systems over a several year period such that completion of the next phase enhances rather than impairs the efficiency and utility of those previously funded and implemented.

g. Preparing system specifications for procurement of necessary hardware and software that will permit phased implementation of the above systems.

The focus in FY84, as shown in by the objectives below, will be on phases a-d. Thus the first part of FY84 will involve an attempt to identify and make specific the needs of ERS in the area of information management and to develop a framework and set of policies to meet these needs. The principal areas where action must begin concurrently to the above work will be in planning for ERS' move in FY84.

5. Organization and Management

Management must participate in the decisionmaking for planning and implementing the new information management technologies in ERS. Not only will this participation enable senior managers to better understand the information revolution and the effects it will have on the ERS mission, but their participation will also lead to effective Agency information management, planning, and operation.

As soon as possible, managers in ERS will receive training in the fundamentals of information management (over 30 managers have already received such training). Performance standards for each manager will be written so as to reflect their responsibilities in this area. Senior managers will be responsible for the development of Division and Agency Information Management needs and for prioritizing these needs to accommodate or redirect available resources.

There is currently no Agency consensus on the most effective organization of information management within ERS. Currently word processing and data entry/validation are decentralized, data processing and MIS are partially centralized, and publishing is completely centralized. No immediate changes are planned, but efforts will be taken to assure effective communication among organizational elements. In particular, each program division will establish a central focus, in the Director's office, for Information Management. The people staffing this function will be responsible for advising on IM needs, improving communications, serving on planning and implementation task forces, and aiding in identifying resources.

6. Hardware/Telecommunications

The long range requirements for ERS in the areas of hardware and telecommunications will be determined through a series of requirements and feasibility studies. These studies, initiated in early FY84, will be designed to answer the following questions:

a. What is the appropriate computer system configuration (including the correct mix of micro, mini, and mainframe computer resources) required to meet ERS' needs?

b. What computer system configuration should support ERS' staff while on field assignments?

c. Should ERS continue to use WCC as its principal source of mainframe service, or is there a feasible and desirable alternative?

d. What are the hardware/telcommunication requirements for the new office space ERS is expected to need in FY84?

e. What is the best way to give each ERS staff member access to an integrated workstation, and through this, to the Agency's information resources?

f. What additional hardware is needed to improve the publication, graphics, and photocomposition processes, and how can these be integrated into the planned computer system configuration?

g. What are the appropriate cost/benefit ratios for the above technologies, and what efficiencies can be achieved through planning and cooperative efforts within the Agency and the Department?

7. Software/Agency Models

This plan does not discuss the software or modeling needs of ERS to any extent, except in the specific areas of database, MIS, and graphics. Nonetheless, software for modeling and other research is vital to effective

performance of the Agency's mission, and a considerable amount of staff time and resources go into these two activities. The Information Management needs developed in FY84, and the work of the Agency Modeling Committee, will be used in the next planning exercise to establish goals and objectives in these areas. Among the questions to be answered:

a. What are the software needs of ERS' integrated information system? What changes in existing software will be required, and what new software will be required?

b. What software will be required to build and support Agency models, and to link them to Agency databases?

c. What procedural and documentation standards are required for the development and maintenance of Agency models and software?

d. Who should perform maintenance of Agency software -- DSC, Division staff, or outside contractor?

e. What categories of Agency software are required, and how should they be developed or acquired?

f. How can software quality be assured?

g. How can ERS staff be trained in the use and availability of Agency software?

8. Data Acquisition and Storage

A key element of ERS' IM plan is the identification of the Agency's data and database requirements. Once the data needs of the Agency are understood, an Agency directory will be created, which will allow individual staff to access Agency data that is of use to them. Further, initiatives to be undertaken with other Agencies (with the expected assistance of OIRM) will assist in the efficient acquisition of data from other agencies.

The central focus of efforts in this area will be the construction and use of databases. No consensus currently exists in ERS over the content of ARIES, the centralized database envisioned in 1980, and currently under development. The development of a database policy will clarify the role of ARIES, and the role of individual and/or Divisional databases. Efforts to ensure the security and quality of the Agency data resources will also be undertaken.

In addition to the challenge of developing a database policy and data directory, serious personnel problems need to be faced. Staff turnover is high in the area of databases and qualified people are difficult to recruit and retain. Possible solutions such as contracting, redirection of existing staff and training will be considered.

9. Information Dissemination

Several major initiatives will occur in this area within the next five years. First, the plan calls for a review of the entire publications process, both to generally improve it and to explore means for further and improved automation. Much of this work would be done by the Information Division of EMS, with technical assistance and guidance from ERS staff.

Publication and presentation quality graphics services will be reviewed and improved. ERS' needs for analytical graphics will also be identified. Many individual Divisions within ERS and EMS are procuring graphic software and hardware, so an overview of this area within the next fiscal year is appropriate.

ERS' initiative in the area of Electronic Dissemination of Information will begin by concentrating on providing internal access to Agency information, while maintaining the public information services already established on a pilot basis. Emphasis in the system design will be placed on covering the broadest possible spectrum, and providing easy electronic access to Agency data and publication. Pilot projects will be used to allow limited public access to key data series, with the first candidates probably being the Agency situation and outlook reports, publication abstracts, and parts of ARIES. Any planning will need to be cognizant of Departmental initiatives in this area.

10. Management Information Systems

Currently ERS managers have little or no organized on-line access to management information data or software. The five year plan regards EMS' project to put the Contracts and Agreements Status System (CASS) and the Internal Fund Control Systems (IFCS) on-line, as a first step towards a unified, integrated, and accountable MIS. The efforts in FY84 to build a model of ERS' IM needs will include determining the requirements for management information, including the needs for automated records management, accounting information, etc. EMS and ERS will be jointly responsible for the development and coordination of this system.

11. Office Relocation

ERS expects to move by July 1984 into a new facility. Regardless of what the chosen office space is, requirements will be defined to accommodate facilities planning and to assure the building provides for information management equipment and systems. Planning for the move will include consideration of installing a Local Area Network to connect present and future workstations, minicomputers, and other computer equipment in a similar fashion as telephones

are connected. Consideration should be given to co-locating the Information Division of EMS and DSC so as to facilitate future joint efforts in the areas of graphics, MIS, and electronic dissemination. Because of the tight time constraints, this planning may not be as well connected to other long range planning as desired.

12. Office Automation/Word Processing

As in the areas of software above, very little direct discussion of office automation or word processing appears in the plan below.

Word processing is currently fragmented in the Agency, with each of the six Divisions/staff offices having a different word processing configuration, and there is no consensus over the need for centralized Agency planning in this area. For this reason, the plan calls for a requirements analysis on word processing needs to be performed early in FY84, followed by the development of a policy statement on word processing. Further planning in FY85 and beyond will build on the results of the FY84 work. The same comments also apply to the area of office automation, which includes electronic mail, word processing, teleconferencing, MIS, etc. Some questions which will be addressed in the area of word processing/office automation include:

   a. What is the best use of word processing in the office; how will the role of clerical and professional staff change?

   b. What is the potential advantage/disadvantage of the technologies of electronic mail, teleconferencing, electronic blackboard, document transfer, videotex, teletex, etc., to ERS?

   c. To what extent should future word processing purchases be compatible with other present and future information management resources? What guidelines should be used for procurement?

   d. Who should be responsible for the acquisition and maintenance of word processing software/hardware?

   e. What are the advantages/disadvantages (costs/benefits) of a local area network in ERS?

13. Employee Development/Personnel Policies

Within the next eighteen months the Agency will develop and implement a comprehensive Information Management training program for staff at all levels. While a heavy emphasis will continue to be placed on 'on-the-job' training and self-training, it is expected that technical staff in ERS will do a considerable amount of teaching, and that outside teachers/courses will be required as well.

The plan does not directly address the issue of how personnel policies will change in relation to the five year plan. It is expected, however, that the requirements analysis and policy clarification in FY84 will require some changes in current personnel policies. For example, new "information manager" or "database manager" positions in each program Division, both at the Branch and Director level, may be created. Similarly, some clerical and statistical assistant positions may change. The additional responsibility for managers may require changes in performance standards. It is also important to consider to what extent, if any, increased automation will enrich or threaten the work assignment, grade, status, complexity, job satisfaction, etc., of staff at all levels. Personnel policies of OPM need also to be examined in light of recent studies (e.g., the Grace report) and any effect on Agency operation highlighted to Department management.

14. Resources Required for the Five Year Plan

As mentioned in the introduction, the resources required for this plan do not include much of the resources already used in ERS for data and word processing. Software maintenance, graphics, word processing both by clerical and professional staff, etc., all consume significant resources not totaled below. It may be possible to redirect some of the current resources discussed in Section B to aid in the completion of the plan, but this decision will necessarily come at the expense of present work.

The staff years estimated for this plan are considerable, and comprise a significant portion of ERS' and EMS' available staff years. About half of these represent new tasks, while half represent the continuation of present information management tasks. To aid ERS and EMS planning, the costs have been broken down by sub-unit (see Table A-1). The figures in parentheses represent about forty-seven staff years devoted to the plan from ERS and EMS, of which twenty-nine staff years represent new requirements. Twenty (20) of these staff years come from the Data Services Center, representing about nine staff years of new requirements. Since DSC has only fifty-four full time staff, this will require a major redirection. The four program divisions will be heavily involved also, with almost sixteen new staff years required. And EMS and the Administrator's office will need to find 3.1 and 1.4 staff years of new resources as well. These resources will be needed, in most cases, for both FY84 and FY85, since some activities begin in late FY84 or early FY85, after the requirements analysis and policy phases have concluded. Although the table shown a slackening off of requirements in FY86 - FY88, this may not be the case, since some requirements could not be predicted now.

The monetary costs of implementing the plan are also high, and are given in Table A-2. Continuing costs (e.g., those for WCC or ARIES operation) are not included, nor are costs for items to be decided, e.g., new printers, a new mainframe computer, etc., nor are costs already budgeted (e.g., new micros, word processors scheduled for early FY84, etc.).

These costs and staff years are high, but the benefits are high also. A careful review of these estimates and a cost/benefit analysis will be a first step in the implementation of this plan, and periodic reviews will be required to control costs. Since a significant amount of the dollar costs are for ERS-wide expenses, a capital account will be created. Improved accounting systems will be used to carefully track costs. Finally, consideration will be given to the use of contractor assistance to aid in managing the staff year increases required.

Table A-1. Staff Years Required by the Plan

FY84

Objective	DSC	DIV	EMS	QA	TOTAL
1 IM Policy	0.5(0.2)	3.0(2.0)	---	0.5(0.4)	4.0(2.6)
2 MIS	0.2(0.2)	0.2(0.2)	2.5(0.5)	0.1(0.1)	3.0(1.0)
3 Training	3.0(0.5)	1.0(1.0)	0.5(0.2)	---	4.5(1.7)
4 IM Planning	1.5(1.0)	2.0(1.0)	0.3(0.2)	0.2(0.2)	4.0(2.4)
5 ARIES	5.0(1.5)	0.5(0.5)	---	---	5.5(2.0)
6 Data Dir.	1.5(0.0)	4.5(2.0)	---	0.5(0.4)	6.5(2.4)
7 File Mgmt.	1.5(0.5)	2.0(1.5)	---	---	3.5(2.0)
8 Data Acq.	0.5(0.2)	---	---	---	0.5(0.2)
9 Cross-Sect.	1.0(0.5)	0.5(0.5)	---	---	1.5(1.0)
10 QC Program	0.3(0.2)	0.3(0.1)	0.3(0.2)	0.1(0.1)	1.0(0.6)
11 Comp. Sys.	3.0(3.0)	2.0(2.0)	---	---	5.0(5.0)
12 Int. Wkst.	0.3(0.15)	0.2(0.1)	---	---	0.5(0.25)
13 New Office	0.2(0.15)	0.2(0.2)	0.5(0.5)	0.1(0.1)	1.0(0.95)
14 Field Sup.	0.2(0.0)	0.3(0.2)	---	---	0.5(0.2)
15 Elec. Diss.	0.5(0.5)	2.0(2.0)	0.5(0.5)	---	3.0(3.0)
16 Publications	0.2(0.2)	0.1(0.1)	0.5(0.5)	---	0.8(0.8)
17 Graphics	0.8(0.0)	0.4(0.4)	0.8(0.4)	---	2.0(0.8)
18 Info. Access	0.1(0.1)	---	0.2(0.1)	0.2(0.1)	0.5(0.3)
TOTAL	20.3(8.9)	19.2(13.8)	6.1(3.1)	1.7(1.4)	47.3(27.2)

FY85

	DSC	DIV	EMS	QA	TOTAL
1 IM Policy	---	---	---	---	---
2 MIS	0.1(0.1)	0.3(0.3)	2.5(0.5)	0.1(0.1)	3.0(1.0)
3 Training	2.5(0.5)	0.5(0.5)	---	---	3.0(1.0)
4 IM Planning	1.5(1.0)	2.0(1.0)	0.3(0.2)	0.2(0.2)	4.0(2.4)
5 ARIES	5.0(1.5)	0.5(0.5)	---	---	5.5(2.0)
6 Data Dir.	2.0(0.0)	1.5(1.0)	---	0.1(0.0)	3.6(1.0)
7 File Mgmt.	1.0(0.5)	1.5(1.0)	---	---	2.5(1.5)
8 Data Acq.	1.5(0.0)	0.4(0.0)	---	0.1(0.0)	2.0(0.0)
9 Cross-Sect.	1.0(0.5)	0.5(0.5)	---	---	1.5(1.0)
10 QC Program	0.3(0.2)	0.3(0.1)	0.3(0.2)	0.1(0.1)	1.0(0.6)
11 Comp. Sys.	2.5(2.5)	0.5(0.5)	---	---	3.0(3.0)
12 Int. Wkst.	0.4(0.2)	0.1(0.1)	---	---	0.5(0.3)
13 New Office	0.1(0.1)	0.1(0.1)	0.1(0.1)	---	0.3(0.3)
14 Field Sup.	0.1(0.0)	0.3(0.2)	---	---	0.4(0.2)
15 Elec. Diss.	0.8(0.8)	0.2(0.2)	1.0(1.0)	---	2.0(2.0)
16 Publications	0.2(0.2)	0.2(0.2)	1.1(1.1)	---	1.5(1.5)
17 Graphics	1.0(0.0)	0.5(0.5)	0.5(0.3)	---	2.0(0.8)
18 Info. Access	0.3(0.2)	---	0.3(0.2)	0.2(0.1)	0.8(0.5)
TOTAL	20.3(8.3)	9.3(6.7)	6.1(3.6)	0.8(0.5)	36.6(19.1)

NOTE: The amounts represent estimated total staff years required; the amounts
in parentheses represent an estimate of how much are new requirements.

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FY86

Objective	DSC	DIV	EMS	OA	TOTAL
1 IM Policy	---	---	---	---	---
2 MIS	0.1(0.1)	0.3(0.3)	1.5(0.5)	0.1(0.1)	2.0(1.0)
3 Training	3.5(1.0)	0.5(0.5)	---	---	4.0(1.5)
4 IM Planning	1.5(1.0)	2.0(1.0)	0.3(0.2)	0.2(0.2)	4.0(2.4)
5 ARIES	5.0(1.0)	---	---	---	5.0(1.0)
6 Data Dir.	0.5(0.0)	1.0(1.0)	---	---	1.5(1.0)
7 File Mgmt.	---	---	---	---	---
8 Data Acq.	0.4(0.0)	0.1(0.0)	---	---	0.5(0.0)
9 Cross-Sect.	---	---	---	---	---
10 QC Program	0.3(0.2)	0.3(0.1)	0.3(0.2)	0.1(0.1)	1.0(0.6)
11 Comp. Sys.	---	---	---	---	---
12 Int. Wkst.	0.5(0.2)	0.1(0.1)	---	---	0.6(0.3)
13 New Office	---	---	---	---	---
14 Field Sup.	---	---	---	---	---
15 Elec. Diss.	0.8(0.8)	0.2(0.2)	1.0(1.0)	---	2.0(2.0)
16 Publications	0.3(0.3)	0.2(0.2)	1.5(1.5)	---	2.0(2.0)
17 Graphics	0.2(0.0)	.15(.15)	.15(0.1)	---	0.5(0.25)
18 Info. Access	0.2(0.2)	---	0.2(0.2)	0.1(0.1)	0.5(0.5)
TOTAL	13.3(4.8)	4.9(3.6)	5.0(3.7)	0.5(0.5)	23.6(12.55)

Objective	FY87 TOTAL	FY88 TOTAL	FY84-88 TOTAL
1 IM Policy	---	---	4.0(2.6)
2 MIS	---	---	8.0(3.0)
3 Training	4.0(1.5)	4.0(1.5)	19.5(7.2)
4 IM Planning	4.0(2.4)	4.0(2.4)	20.0(12.0)
5 ARIES	3.0(1.0)	1.0(0.0)	20.0(6.0)
6 Data Dir.	1.5(1.0)	1.5(1.0)	14.6(6.4)
7 File Mgmt.	---	---	6.0(3.5)
8 Data Acq.	0.5(0.0)	0.5(0.0)	4.0(0.2)
9 Cross-Sect.	---	---	3.0(2.0)
10 QC Program	1.0(0.6)	---	4.0(2.4)
11 Comp. Sys.	---	---	8.0(8.0)
12 Int. Wkst.	---	---	1.6(0.85)
13 New Office	---	---	1.3(1.25)
14 Field Sup.	---	---	0.9(0.4)
15 Elec. Diss.	2.0(2.0)	0.0(0.0)	9.0(9.0)
16 Publications	1.0(1.0)	---	5.3(5.3)
17 Graphics	---	---	4.5(1.85)
18 Info. Access	0.5(0.4)	0.5(0.4)	2.8(2.1)
TOTAL	17.5(9.9)	11.5(5.3)	136.5(74.05)

NOTE: The amounts represent estimated total staff years required; the amounts in parentheses represent an estimate of how much are new requirements.

Table A-2. Costs of the Plan
($1,000)

Objective	FY84	FY85	FY86	FY87	FY88	TOTAL
1 IM Policy	40	---	---	---	---	40
2 MIS	80	150	35	---	---	265
3 Training	4	10	20	20	20	74
4 IM Planning	---	---	---	---	---	---
5 ARIES	25	40	---	---	---	65
6 Data Dir.	25	15	5	5	5	55
7 File Mgmt.	20	40	---	---	---	60
8 Data Acq.	10	10	10	10	10	50
9 Cross-Sect.	---	---	---	---	---	---
10 QC Program	---	15	10	25	---	50
11 Comp. Sys.	410	400	---	---	---	810
12 Int. Wkst.	10	20	25	25	---	80
13 New Office	---	---	---	---	---	---
14 Field Sup.	25	25	---	---	---	50
15 Elec. Diss.	50	40	40	50	---	180
16 Publications	20	50	100	25	---	195
17 Graphics	---	160	---	---	---	160
18 Info. Access	30	30	20	20	20	120
TOTAL	749	1005	265	180	55	2254

NOTE: Costs do not include personnel costs, nor do they include costs for
current operations, development, or expected enhancements not included
in the Five Year Plan.

15. **Implementing the Five Year Plan**

As is well recognized, it is far easier to "plan the work" than to "work the plan". Difficult decisions regarding resources, priorities, policy, and personnel are part of the process of managing change. To facilitate this process, the following steps will be taken:

   a. An Information Management committee will be formed to oversee the further development and implementation of the five year plan. In particular, this committee should:

      1. Seek comments on the plan from as many interested parties as possible, including reviews from other USDA Agencies and outside USDA.

      2. Review other USDA Agencies plans for areas of complementaries and conflict with ERS' plan, as well as possible improvements or additions to ERS' plans.

      3. Review resources requirements, Agency constraints, etc. If needed, recommend to the Administrator that priorities be set and/or resources redirected or allocated where needed.

      4. Formally review progress of the five year plan quarterly, and make revisions as necessary.

   b. The committee above will consist of a senior manager from each Division in ERS. It will also have at least one senior manager from EMS, and the senior IRM official or an alternate from the Office of the Administrator. The chairman of the committee will have a major portion of his/her time devoted to this activity.

   c. Each program division will designate, as soon as possible, an information manager from their Division. The information managers shall act as points of contact for the Division regarding Division information management resources, requirements, and plans. They should be knowledgeable about each Division's data, databases, computer resources, publications process, outlook and situation process, and graphics, and be able to articulate to planning committees the problems, issues, and needs of their Division.

   d. To aid in the implementation of this plan, the objectives have been grouped into four subgroups. Work teams may be assigned to each subgroup by the planning committee. The grouping is as follows:

I.   Management/Policy

    83-001   Information Management Policy
    83-002   Improved Integrated MIS
    83-003   Employee Development
    83-004   Information Management Planning

II.   Data/Databases

    83-005   ARIES Implementation
    83-006   Automated Data Directory
    83-007   File Management/Data Documentation
    83-008   Data Acquisition and Sharing
    83-009   Cross-Sectional and Hierarchical Data
    83-010   Quality Control Program

III. Hardware/Telecommunications

    83-011   Computer System Configuration
    83-012   Integrated Workstation Access
    83-013   New Office Requirements
    83-014   Support to Field Assignments

IV.   Information Dissemination

    83-015   Electronic Dissemination
    83-016   Integrated Publication Process
    83-017   Automated Graphics
    83-018   Information Access

B. Overview of Information Management in ERS

1. History

ERS has steadily increased its use of automated data processing (ADP) technology over the last 20 years. Much of the Agency's research, situation and outlook, and staff work depend on the use of automated files, databases, computer models, graphics, and word processing.

In 1975 programmers and computer analysts throughout the Agency were consolidated into the Data Services Center (DSC), which was given responsibility for providing a wide range of ADP services and for database development. However, most of the ERS staff located outside Washington continue to use University or Experiment Station ADP equipment and personnel for their information management needs. Word processing has remained decentralized and each division is responsible for its own word processing facilities, although each division's output may be passed through a central photocomposition unit.

2. Current Assessment

Most ADP development and processing are done on the Department's Washington Computer Center (WCC) with remote job entry/output through Agency equipment. With the purchase and subsequent relocation of the IBM 4331 minicomputer to ERS space, ERS has shifted much of the development work to the 4331 and has begun to develop some pre-processing (data entry, edit, etc.) capabilities. The current configuration for the IBM 4331 includes a model 1 processor capable of executing about 200,000 instructions per second, six 3310 disk drives containing 387 million bytes of storage, a tape drive card reader and two line printers. There are twenty 3270 type devices (terminals) attached to the system. DSC utilizes two of the devices as system peripherals and fifteen as development tools, while three are used by the Economic Development Division for pre-processing of data/jobs being executed at WCC. Approximately 128 million bytes of the disk storage are dedicated to system storage and operation, and the remaining 256 million bytes are available for user storage.

ERS has Hewlett-Packard graphics terminals and plotters that are used to produce graphs and charts in presentation quality. Interfaces have also been developed that allow researchers to interface with the sophisticated software at WCC to produce State and county maps. Due to limitations of the current equipment, these products are generally not allowed in ERS publications.

Implementation of the first phase of the new database management system for ERS is approaching. This state-of-the-art system includes creation of a data naming convention and conversion of all data to the new system, documentation of Agency data in the data dictionary and development of interfaces between the system and the users for time series data. Cross-sectional data requirements are beginning to be analyzed.

Word processing within ERS is performed on several different mini and microcomputer systems, including WANG OIS 140-145 DEC PDP 11/24-34, Alanthus 1000, and Lexitron. EMS maintains a central publishing center using a WANG OIS 125 to do final preparation of documents for publication.

ERS has recently purchased about 50 microcomputer systems, including IBM PC's, Televideo, and WANG PC's. Presently these systems are being used to reduce data entry costs, supplement word processing, and do simple spreadsheet analyses. Emerging uses of microcomputers include graphics, economic modeling, and policy analysis. The acquisition of minicomputers and microcomputers and the addition of graphics packages will have a substantial impact upon the information management environment within the Agency.

ERS' automated information management costs were estimated at 4.875 million in FY82, with FY83 costs expected to exceed 5.0 million. These estimates include personnel costs only for DSC staff, and do not include the significant division personnel time spent developing and operating automated systems. Nor does it include the non-automated components of information management, including publication and data acquisition and preparation costs, which are necessary to ERS' mission. In the broadest sense, of course, it can be said that almost all of the Agency's resources is spent on collecting, analyzing, and producing information.

Information Management issues identified by ERS encompass: quality of data, communications, and hardware and software enhancements. Quality of data issues include concerns on the accuracy and consistency of data obtained and maintained by ERS such as different type formats, inconsistent data elements, and undocumented data elements. The communications issues include two related factors: documentating the many models and databases within ERS and making this information available to all and improving the communications between researcher and programmer. Hardware and software enhancements involve the upgrade, training and efficient use of equipment and software packages within the Agency. Some other major issues are: the increasing cost of ADP services; the time it takes for computer applications development; the extent to which standardization or compatibility of equipment and software should be required; the numbers and kinds of microcomputer systems to purchase; the impact of user fees on the publication process; the need for training of staff at all levels; the growing need for high quality graphics; the impact of electronic dissemination of information; the content and operation of databases; and the impact of bringing field staff to Washington. There remains a lot to be resolved and the implementation of the long range plan will greatly enhance the research and staff efforts of the Agency.

C. Technology Assessment*

The ERS information management requirements encompassed by this plan should be developed in context of the projections contained in this section. The projections are based on the feeling that the current emphasis for data processing is being placed on "Information Management" or "Information Centers". Although these phrases carry slightly different connotations, they both can generally be described as defining, developing, and controlling organizational data while supporting end-users in utilizing available methodologies to meet their requirements. This integrated concept calls for not only the traditional development and support of organizational databases and systems but also the organization and support of end-user computing. This is often accomplished by the development of policies and procedures to guide the end-user in what is available and then providing technical support to assist the end-user in reaching the desired goals. The following projections indicate the anticipated direction that hardware, telecommunications, software, database and graphics will take over the next five years.

Hardware:

The traditional distinction between the classes of computers is becoming blurred. There is a great deal of overlap as the super-minicomputers approach and even surpass the processing power of the mainframe computers and the super-microcomputers can surpass many minicomputers.

It is expected that the mainframe computer will generally retain its traditional configuration of relatively large physical size, supporting large numbers and types of peripheral devices and capable of executing millions of instructions per second. It will continue to serve as the "number cruncher" and be the logical choice for the processing of Agency systems. In order to meet the need to store large databases and to utilize complex database management systems that allow for end-user interface and manipulation of data, the need for large scale systems will continue to grow. Also the demand for "user friendly" systems will continue to spur the development and utilization of generalized systems that offer greater flexibility to the user but at a cost requiring larger more sophisticated central processing units and storage devices.

The minicomputer continues to grow into the area of the traditional mainframe. Todays super-minicomputers are capable of processing in the range of two to six million instructions per second but are generally capable of supporting a limited number of peripheral devices. The minicomputer will continue to serve in the distributed processing environments and will be used as a central node in local networks controlling communications to mainframes and micros and providing medium range central processing power for local applications.

* This Section was prepared by A. Michael Ahrens, Chief, Information Resources Branch, Data Services Center.

In the realm of the microcomputer, the rapid expansion of end-user devices will continue to grow. The microcomputer will continue to become more powerful, storage device capacity will expand, networking and software will continue to be developed and refined. With the development of more powerful 32 bit machines, the clustered, multi-user systems will become predominate.

In the area of peripherals (disk and tape storage, output devices, etc.) the major changes will come in the area of computer output. The driving force behind this is the need for integrated office systems that can produce letter quality output. Laser printing systems produce not only the high quality output but also allow for the integration of graphic and artistic material with text. These systems are even being used as publication centers by many businesses and Government agencies. The laser printing systems will become common within the next two years.

Speech recognition will offer an alternative to traditional methods of data entry. Current speech recognition systems operate on a defined-speaker basis. This is a limiting factor in the use of such systems as it allows no flexibility for alternative users or problems that alter one's speech. However, it does allow tailoring for specific applications. Within the next two years speaker independent systems will be evolving and will be suitable for some applications. They will remain expensive and probably will not become common for four or five years.

Telecommunications:

A main requirement of end-user computing is the ability to combine information from one system to another. The hardware currently exists to make this possible. Local Area Networks have been developed and can efficiently handle communications within an organization and the Telephone Companies can provide the necessary long distance communications services. In fact, the Department has awarded a mandatory contract to TELENET to provide an integrated transmission network to meet the various requirements of all the Agriculture Agencies. This is a mandatory contract in that all Agency data transmissions outside the local dialing area must use TELENET. However, due to the lack of standardization in protocols and data representation, the software necessary to communicate between diverse systems will not be included and in fact does not exist. Over the next five years standards will be developed and software houses will be concentrating on products to control the accessing, storing, formatting and routing of data and text from different systems. Until this is completed, true information systems will not be available.

Another requirement that needs to be met by the industry is the combination of the digital (data) and voice communications systems. The rapid development of the Private Automatic Branch Exchange (PABX) systems is indicative of the progress being made in this area. This equipment will be necessary to truly automate the office by integrating local voice, message, text and data transmission and should be readily available within the next two years.

Software:

End-user computing is associated with large database management systems, application/report generators, interpretive languages, on-line programming and personal workstations. In order to support this array of user requirements vendors will continue to develop large, integrated packages that will require large scale computers to offset the inefficiencies of the software. The vendors that have traditionally provided application software for the mainframe computers are developing packages that include the popular microcomputer applications such as spreadsheets, analytical/modeling programs, graphics and file transfers with their sophisticated database management and editing tools. These packages will allow for the standardization of tools being used by an organization and will blend in with local area networks and lower cost terminals.

On the personal computer scene the vendors will continue to develop and refine the interfaces between the mainframe and the personal computer to assist in the loading, downloading, manipulation and analysis of data. The shake out over the standard operating system will continue with PC-DOS, UNIX and CPM remaining the top choices. UNIX will grow as the trend to 32 bit multi-user systems overtakes the standalone personal computer. The number and type of application programs for personal computers will continue to grow and the problem of portability between systems will be lessened but will not be totally resolved. The ability to move data and applications from one microcomputer to another and from one system to another will be a key requirement over the next five years.

Database:

Barring an unexpected technological breakthrough, there will be no major changes in the large scale database management systems over the next few years. What will change will be the method of processing and the number of interfaces and coordinated programs provided by the vendors. Agency data will be stored on the large centralized systems while the actual manipulation of the data will be off-loaded to minicomputers and then to microcomputers. Integrated software will be developed to accomplish the networking of locations and different type machines and many additional application type packages will be provided to aid in the manipulation and analysis of data. The major vendors will offer totally integrated packages that will support end-user computing without purchasing packages from different vendors.

Graphics:

There are three levels of graphics; publication, presentation, and general end-user. All levels of graphics will continue to expand and to be refined over the next three to five years. Currently most sophisticated graphic systems carry a high price and are not intended for casual users. With the

growth of the microcomputer this is beginning to change. However the software is not available to do high level graphics and most current microcomputers lack the speed, memory and storage to develop complex items such as U.S. State/county level maps. Development will continue but will generally be limited to a specific machine or system and will not be intended for implementation on the generic microcomputers.

D. Information Management Goals

1. Introduction

An important first step in the preparation of this plan was the development of
information management goals. To help in this process the committee
interviewed more than eighty staff members at all levels in ERS, including
managers, clerical staff, economists, data processing staff, and other support
staff. Participants were first asked to identify those information sources,
processes, and outputs with which they had direct contact. Then, working in
small groups, they listed those IM issues and concerns, which related to their
job requirements. Finally each participant was asked to come up with a set of
specific recommendations for ERS to pursue over the next five years. From
these meetings a series of 242 recommendations were received. These were
coded to protect their confidentially and reviewed by the committee. The
committee grouped the recommendations into the set of five overall goals
listed below. The material collected in these interviews was also used in
developing the objectives in Section E, and will be used again by the
implementation subgroups.

The relationship between goals and objectives is given in Table D-1.

2. Goal #1 - Increased Productivity

A. Goal Statement: To increase productivity and program effectiveness
through more efficient use of information resources.

B. Background, Relation to Agency Mission: The utilization of automated
systems and equipment provides the opportunity for ERS to examine current
methods and procedures for the purpose of increasing productivity and program
effectiveness. Improvements in productivity will be attained by combining
functions or tasks, eliminating inefficient operations, or introducing new
technology or productivity tools that can do the job more efficiently.

C. Relationship to Department Goals: The objectives supporting this goal
will enhance ERS' use of automated information systems and this supports and
is supported by the Department's IRM goal #2, "to increase productivity
through effective and efficient management and utilization of information
resources and technology."

3. Goal #2 - Improve User Services

A. Goal Statement: To provide improved user services in terms of responsiveness and quality.

B. Background, Relation to Agency Mission: In initial planning interviews held with senior managers in ERS, improvements in responsiveness were mentioned more frequently than any other goal or objective. Improvements in the ability to respond to "short-fused" external requests for information were cited as areas of greatest need, along with the need to assure quality.

The Agency's primary product is economic information for public and private decisionmaking. Improving responsiveness to our clientele directly benefits our central mission.

C. Relationship to Department Goals: The objectives supporting this goal will improve the services provided by the Department, and thus supports and is supported by the Department's IRM goals #4, "to enhance the inter- and intra Departmental availability of information resources," and #6, "to increase the usefulness of USDA information."

4. Goal #3 - Improve Capabilities and Coordination

A. Goal Statement: To improve capabilities and coordination through automation, integration, and the use of interactive systems.

B. Background, Relation to Agency Mission: ERS currently has many computer hardware and software systems including many databases, maintained by individual separate Division, the Data Services Center, or the Agency. There is a recognized need to ensure compatibility and integration among these systems while maintaining the flexibility implicit in their design and operation.

The nature of economic research and staff work requires extensive communication and coordination among ERS' diversified systems and staff. The objectives under this goal therefore contribute the Agency's mission.

C. Relationship to Department Goals: The objectives supporting this goal will enhance ERS' use of automated information systems and this supports and is supported by most of the Department's IRM goals.

5. Goal #4 - Support ERS Long Range Planning

A. Goal Statement: To support ERS long range planning in such areas as data, models and projections, situation and outlook, and research and staff analysis through automated information management and state-of-the-art technology.

B. Background, Relation to Agency Mission: This information resources management goal recognizes that any information resources management effort must be consistent with an complementary to the overall goal and objectives of the Agency. Accordingly, objectives devised under this goal should have direct relationship to the evolving ERS Long Range Plan.

The four areas specified within the goal statement were mentioned in the ERS Long Range Plan outline and accommodate the primary functions of each Program Division.

The goal also introduces the opportunity to address the use of state-of-the-art technology equipment and techniques to achieve desired results. This does not preclude identifying objectives involving new technology in other IRM goal areas. It is expected that some objectives will apply to more than one goal in these cases, they will be cross-referenced accordingly.

C. Relationship to Department Goals: Objectives under this goal are supported by most of the Department's IRM goals.

6. Goal #5 - Further USDA IRM Goals

A. Goal Statement: To further USDA IRM goals as related to the ERS mission.

B. Background, Relation to Agency Mission: USDA Departmental Regulation 3110-1, the directive that establishes the requirements for each Agency to prepare a Five Year Information Resources Management Plan, states as policy that Agency long range plans will be based on Departmental IRM goals as well as other considerations. This goal, therefore, has been formulated to keep this requirement in the forefront of ERS Information Resources Management planning.

C. Relationship to Department Goals: Many, if not all, of the ERS IRM goals embody the essence of the USDA IRM goals delineated within the initial USDA Long Range Information Resources Management Plan (FY83 Planning Year) prepared by the Office of Information Resources Management on April 22, 1983. For example, ERS Goal #1 relates directly to USDA Goals #2 and #6, dealing with productivity and cost reduction, respectively.

Table D-1. Goals and Objectives of the ERS Information Management Plan

Objectives/Goals	1 Increase Productivity	2 Improve User Services	3 Capabilities & Coordination	4 ERS Long Range Plan	5 USDA IRM Goals
1. Policy	X			X	
2. MIS	X			X	
3. Employee Dev.	X				X
4. Planning			X	X	X
5. ARIES	X			X	
6. Data Dict.	X		X		X
7. File. Manage.	X		X		X
8. Data Acq.			X		X
9. Cross-Sect.	X				
10. Quality Control		X			X
11. Comp. Sys.	X			X	
12. Intg. Wkst.	X	X	X		
13. New Office	X		X		
14. Field Staff	X			X	
15. Elect. Diss.		X		X	
16. Publications	X	X	X		X
17. Graphics	X		X		
18. Info. Access		X	X		

E. Information Management Objectives

The objectives in this section have been grouped into the four categories specified below. It is expected that implementation work groups will be organized for each category of objectives. Tables A-1 and A-2 in Section A summarize the resources required for these objectives. Table D-1 in Section D gives the correspondence between the Agency IM goals and objectives.

I.   Management/Policy

    83-001   Information Management Policy
    83-002   Improved Integrated MIS
    83-003   Employee Development
    83-004   Information Management Planning

II.   Data/Databases

    83-005   ARIES Implementation
    83-006   Automated Data Directory
    83-007   File Management/Data Documentation
    83-008   Data Acquisition and Sharing
    83-009   Cross-Sectional and Hierarchical Data
    83-010   Quality Control Program

III.   Hardware/Telecommunications

    83-011   Computer System Configuration
    83-012   Integrated Workstation Access
    83-013   New Office Requirements
    83-014   Support to Field Assignments

IV.   Information Dissemination

    83-015   Electronic Dissemination
    83-016   Integrated Publication Process
    83-017   Automated Graphics
    83-018   Information Access

Objective 83-001: INFORMATION MANAGEMENT POLICY

1. Objective Statement: To determine overall Agency policy on the content, operation, planning and management of information management by December 1984.

2. Background: This objective supports the Agency's goal to increase productivity and to improve program effectiveness through more efficient use of information resources. At present, there is no comprehensive written policy that delineates what data will be part of ERS databases, and the structure and management of these databases. Similarly, a more defined policy statement is required in the area of word and data processing applications, hardware and management. Program effectiveness would improve substantially and planning would benefit from clearly specified Agency policies. Additional, written guidance on operation, planning and management would: 1) improve the services rendered ; 2) take advantage of "lessons learned" from earlier applications; and 3) assure all organizational elements have the advantage of the best tools and methods necessary for the accomplishment of their work. This objective is related to Objective 83-011.

3. Approach: ERS will examine samples of other Agencies' information management database and word processing policies as references for its effort. The starting point will be a careful review of what are the ERS requirements from the perspective of senior management and staff. Emphasis will likely be placed on the content of Agency databases and clarify word and data processing policies, and criteria will be generated to select the appropriate database systems for forthcoming database applications. Management responsibilities for all ERS databases and word and data processing will be defined as part of the new policy statements.

4. <u>Milestones</u>:

	Start Date	Completion Date	Responsible Parties*
Obtain copies of other Agencies' information management Administration and Operation Policies, Procedures, and Practices	OCT 83	DEC 83	DSC
Develop analysis of ERS information management requirements	OCT 83	FEB 84	Data Coordinator, All Divisions, DSC
Recommend to Administrator guidelines on the content, etc., of the ERS database system	DEC 83	MAR 84	Data Coordinator, All Divisions, DSC
Clarify and resolve policies regarding ERS databases and information management	MAR 84	MAY 84	Administrator
Issue and ERS Information Management Policy statement	MAR 84	JUNE 84	Administrator

5. <u>Resource Requirements</u>:

FY	FY 84	FY 85	FY 86	FY 87	FY 88
a) Staff years	4				
b) Other costs	40				

*The "responsible parties" shown for each milestone/event does not mean "exclusive" but rather "lead" responsibility. Staff years and costs shown for each objective include costs and labor for all parties, including EMS.

6. Constraints/Conditions/Assumptions:

   Decisions with respect to this objective may
   affect the schedule under objective 83-011.

7. Responsibilities:

   a. Initiated: _____   _____
                        (title)   (date)

   b. Approved: _____   _____
                        (title)   (date)

<u>Objective 83-002</u>:   IMPROVED INTEGRATED MIS

1. <u>Objective Statement</u>:   To develop and implement an improved integrated Management Information System (MIS) for use by Division and Agency Management by July 1986.

2. <u>Background</u>:   This objective supports the Agency's goal to increase productivity and to improve program effectiveness by providing necessary information to proper levels of management. Recognition has been given to inadequacies of the current MIS and its operation. The current version is limited in its scope and could be more useful to Division management. Development of requirements for an improved MIS are in progress.

An important subset of MIS deals with budget and contractual information. ERS has maintained its budget and contract records in a mixed manual-automated mode. Analysis of the methods used indicated it would be more effective if Division management could access budget and contract records directly via local terminals and thus receive more accurate and current information. Eventually, the automated records management system will become an integral part of the Agency's MIS.

3. <u>Approach</u>:   Implement an automated records management system for budget and contractual records. After evaluating the system determine if the system is adequate or whether other alternatives or modifications should be considered.

Complete the requirements analysis for the total MIS. A conceptual design of the MIS will be developed. This design will be compared to other like systems in use by other Agencies as a means to take advantage of features proven advantageous through actual experience. The revised conceptual design will be reviewed by the proposed end-users for any further input. Once agreement is reached on the overall MIS design, individual modules will be developed and implemented.

4. <u>Milestones</u>:

	Start Date	Completion Date	Responsible Parties
<u>Automated Administrative Record Keeping System</u>			
Develop, test and install an automated contract and budget records management system	OCT 83	JULY 84	EMS
Evaluate the system	JULY 84	AUG 84	All Divisions
Identify any required additions or modifications to the system	AUG 84	SEPT 84	All Divisions
Implement additions and/or modifications	OCT 84	APR 85	EMS, All Divisions
<u>MIS</u>			
Determine each Division's management information requirements and those of the Administrator and his staff	OCT 83	JAN 84	All Divisions, EMS
Prepare a statement of the functional requirements for the ERS MIS including the determination of future capability requirements	FEB 84	MAR 84	EMS, DSC
Determine program specifications including hardware needs after examining compatibility of existing systems within the Divisions	APR 84	JUNE 84	EMS, All Divisions
Prepare system specifications, write software modules, debug and test	JULY 84	NOV 84	EMS, DSC
Implement system incrementally throughout period	DEC 84	JULY 86	EMS, All Divisions

5. Resource Requirements:

FY	FY 84	FY 85	FY 86	FY 87	FY 88
a) Staff years	3	3	2		
b) Other costs	80.	150	35		

6. Constraints/Conditions/Assumptions:

It is assumed that a distributed system will meet the needs and derive the anticipated benefits envisioned by automating the contract and budget record management process. Future modifications may be required to the software to permit the degree of accessibility and interaction desired by the Divisions.

It is assumed that EMS and ERS will be jointly responsible for the complete development, testing and implementation of the ERS MIS. Other costs in FY 85 and FY 86 are for peripheral equipment necessary to provide interactive access capabilities to the Divisions.

7. Responsibilities:

a. Initiated: _____   _____
                            (title)   (date)

b. Approved: _____   _____
                             (title)   (date)

Objective 83-003: EMPLOYEE DEVELOPMENT

1. Objective Statement: To develop and implement by January 1985, a
                            comprehensive training program for Agency
                            personnel at all levels to improve communications
                            and planning, facilitate the introduction of new
                            technology, and to improve productivity.

2. Background: This objective supports the Agency's goal to
                            increase productivity and improve program
                            effectiveness by improving staff awareness of and
                            effective use of new technology. There is a
                            recognition, noted in both Agency and Division
                            planning documents, of a need for increased
                            training in all areas of information management.
                            Such training needs have been identified at all
                            staff levels, and reflect requests by employees
                            themselves for this training. Several classes
                            have already been organized for mid- and senior
                            level managers, and ERS has made extensive use of
                            the Information Technology Center (including
                            contributing staff to lead classes there).

3. Approach: The training program will be structured in three
                            ways. First, heavy emphasis will continue to be
                            placed on on-the-job experience, with staff
                            learning from a combination of manuals, visual
                            aids, and consultation with fellow employees.
                            Second, as new hardware and software systems or
                            techniques are introduced, in-house training
                            sessions will be organized. Finally, for
                            individuals requiring special skills or for groups
                            for whom no internal instruction can be obtained,
                            external sources will be sought. An orientation
                            program for new employees will also be created.
                            Preference shall be given in these instances to
                            the USDA Graduate School, the ITC, and to classes
                            organized on-site specifically for ERS.

4. Milestones:

	Start Date	Completion Date	Responsible Parties
Develop proposed comprehensive training plan	OCT 83	APR 84	DSC, EMS, All Divisions
Plan reviewed and approved	APR 84	AUG 84	All Divisions, Administrator

Implement plan	AUG 84		JAN 85		DSC, EMS, All Divisions

5. Resource Requirements:

FY	FY 84	FY 85	FY 86	FY 87	FY 88
a) Staff years	5	3	4	4	4
b) Other costs ($1,000)	4	10	20	20	20

6. Constraints/Conditions/Assumptions:

> This approach assumes that DSC will be handling an increasing portion of the training load, and that this will require some redirections in DSC staff load. The costs above are conservative estimates of training costs, and assume that outside training and equipment costs are minimal.

7. Responsibilities:

a. Initiated: _____   _____
                        (title)   (date)

b. Approved: _____   _____
                        (title)   (date)

Objective 83-004: INFORMATION MANAGEMENT PLANNING

1. Objective Statement: To establish a continuing information management planning process, including effective feedback and communication mechanisms, by April 1984.

2. Background: This objective supports the Agency's goals of supporting ERS long range planning and of providing improved user services by setting up information management communication and planning mechanisms. Recently several Divisions and task forces have reviewed parts of information management, and all have concluded that improved communication and planning are essential. Lack of these effective feedback mechanisms can produce confusion, lack of coordination, and conflict among staff members of different levels of technical responsibility.

3. Approach: It is expected that an individual, team, or task force will be appointed by the Administrator to monitor the implementation of the Agency's five year information management plan. This team will review the suggestions, problems, and concerns raised by previous task forces, and the information received during the interviews and requirements analysis done as part of the development of this plan. A mechanism to institutionalize the planning process will be adopted. Revisions to the plan will be made, and an implementation design prepared. Meanwhile, existing communication channels such as newsletters, staff meetings, seminars, and reports will be examined for possible improvements. Information gathering devices such as surveys, performance statistics, and status reports will be examined for their usefulness.

4. Milestones:

	Start Date	Completion Date	Responsible Parties
Review plan and seek feedback	OCT 83	JAN 84	IM Planning Committee
Formulate planning mechanism	OCT 83	JAN 84	IM Planning Committee, OA

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Prepare implementation
plan                        JAN 84          APR 84          Committee
                                    (and continuing annually)

FY 85-89 planning
process                     APR 84          SEPT 84         All Divisions
                                    (and continuing annually)
```

5. <u>Resource Requirements</u>:

FY	FY 84	FY 85	FY 86	FY 87	FY 88
a) Staff years	4	4	4	4	4
b) Other costs	–	–	–	–	–

6. <u>Constraints/Conditions/Assumptions</u>:

7. <u>Responsibilities:</u>

    a. Initiated: _____   _____
                           (title)   (date)

    b. Approved: _____   _____
                           (title)   (date)

Objective 83-005: ARIES IMPLEMENTATION

1. Objective Statement: To complete the development and implementation of
                              ARIES by December 1987.

2. Background: The development of the Agricultural Research
                              Information for Economic Studies (ARIES) System
                              was identified as one of the components in the May
                              1980 Agency Data Management Plan necessary for the
                              accomplishment of better data management and
                              research goals of the Agency. Action on this
                              objective commenced in FY 1980. The requirements
                              analysis and system design have been completed.
                              Time series and cross-sectional databases are to
                              be part of the total ARIES System. The IDMS
                              database management system was acquired, as a
                              result, to serve as the foundation for the time
                              series component of ARIES and the data directory.
                              Current efforts involve coding and testing of the
                              first phase portion of the system. This objective
                              relates to all of the identified IM Goals within
                              this plan.

3. Approach: ARIES is to be developed and implemented in four
                              main phases: 1) analysis and design of time-
                              series data capabilities; 2) conversion from the
                              existing time-series database to ARIES and the
                              inclusion of any additional time-series data
                              designated as having Agency-wide usefulness; 3)
                              analysis and design of other data capabilities,
                              including cross-sectional data; and 4)
                              implementation of cross-sectional database(s) and
                              other designated capabilities. Once developed,
                              ARIES will be updated continuously as key
                              variables become available. Consideration will
                              be given to other database software besides IDMS
                              for Phase 3 and 4 above. Development of ARIES
                              beyond current implementation of time series will
                              proceed in accordance with decisions made under
                              Objective 83-001 and 83-009.

4. Milestones:

	Start Date	Completion Date	Responsible Parties
Phase I: Time-Series Capability Development			
Gather requirements, develop functional requirements and technical specifications	MAY 80	Completed APR 81	DSC
Evaluate, select, install, and test DBMS	MAY 80	Completed SEPT 81	DSC
Develop logical model, DBMS physical design, Data Naming Convention	MAY 81	DEC 83	DSC
Execute program coding, system test, and develop user's guide	JAN 82	OCT 83	DSC
Add secondary capabilities	OCT 83	OCT 84	DSC
Phase II: Conversion of Time-Series			
Develop conversion plan and conversion software	JAN 83	SEPT 83	DSC
Identify test user(s)/ data, and train users	JAN 85	JAN 84	DSC
Load and test	SEPT 83	DEC 83	DSC
Phased conversion of ERS data	JAN 83	JUN 84	DSC
Terminate old system	JUN 84	JUN 84	DSC

Phase III: Other Data Capability

Gather requirements, develop functional requirements and technical specification	JAN 84	JULY 84	DSC, All Divisions
Evaluate system needs	JULY 84	SEPT 84	DSC
Select new system (if need dictate); acquire, install and test selected software	SEPT 84	JUNE 85	DSC
Develop logical model, data naming standards, physical design	JUN 84	DEC 85	DSC, All Divisions
Coding and systems testing	JAN 86	FEB 87	DSC
User's guide	OCT 86	MAR 87	DSC
Secondary capabilities	MAR 87	SEPT 88	DSC

Phase IV: Implementation of Other Data

Develop loading plan	NOV 86	JAN 87	DSC, All Divisions
Identify and prioritize users/data	NOV 86	FEB 87	DSC, All Divisions
Begin phased loading	MAR 87	DEC 87	DSC, All Divisions

5. Resource Requirements:

		FY 84	FY 85	FY 86	FY 87	FY 88
a)	Staff Years	5.5	5.5	5	3.5	1
b)	Other Costs	25[1]	40[2]	-	-	-

[1] One (1) IBM-PC with color and IDMS/R software.

[2] Increased Disk Storage for ARIES $10,000.
ADS/Online Software, Online Mapping Software $30,000

6. Constraints/Conditions/Assumptions:

The principal constraints are the requirement for adequate, well trained staff. In addition, the system is to be developed and run on WCC, at least in FY84 so that adequate operation and technical support of WCC is required.

7. Responsibilities:

a. Initiated: _____   _____
                        (title)   (date)

b. Approved: _____   _____
                        (title)   (date)

Objective 83-006: AUTOMATED DATA DIRECTORY

1. **Objective Statement:** To compile an automated directory of the Agency's data resources by September 1985.

2. **Background:** This objective supports the Agency's goal to increase productivity and improve program effectiveness by making available to Agency staff an index listing of the data resources required information to conduct their work. Researchers have had many problems in finding and/or sharing data, and resources have been spent in the task of creating redundant data files and in acquiring duplicate data. The requirements for and advantages of a data directory were recognized in the Agency's Data Management Plan (1980). In a broader sense, ERS needs an overall information retrieval system. Much of our published material is not indexed, properly archived, or easily retrievable. This weakens the institutional memory of the Agency, especially as long term staff members depart. It is recognized that these inefficiencies have reduced the Agency's productivity, and may lead to untimely or inadequate responses to staff inquiries. This objective is functionally related to objectives 83-001, 83-005, and 83-008.

3. **Approach:** A committee, representing all Divisions, will develop guidelines for types of data to be included in the data directory and needed characteristics of the search routines. A classification scheme will be developed by DSC with advice from the committee, utilizing both data needs dictated by ERS mission and interviews with data users and sources within the Agency. Following this, initial documentation will be developed online for existing data. Appropriate keyword search/indexing software will be acquired and attached to the Agency database management system. Then each data set will be classified and incorporated into the system.

A similar approach will be followed in the area of information retrieval. Cooperative efforts are currently underway within the social science and library professions to set up indexing and keyword schemes, and the Agency is participating in these efforts. Expansion of the reference room is being planned and some microfiche/microform equipment has been acquired. Documentation for existing bibliographic databases is continuing, but more resources will be needed. Milestones in this area will be developed as part of the next five year plan.

4. Milestones:

	Start Date	Completion Date	Responsible Parties
Develop guidelines on data to be included	OCT 83	JAN 84	Divisions, DSC, OA
Develop classification scheme	JAN 83	MAR 84	Divisions, DSC, OA
Develop initial documentation of Agency data	MAY 83	SEPT 84	DSC, Data Owners
Complete feasible classification scheme	JAN 84	FEB 85	DSC
Analyze alternative keyword search software, acquire and link to database	SEPT 83	JAN 85	DSC
Classify the data using new software	JAN 85	JULY 85	DSC, Data Owners, Data Coordinator
Train users in use of new system	JUN 85	SEPT 85	DSC, All Divisions

5. Resource Requirements:

FY	FY 84	FY 85	FY 86	FY 87	FY 88
a) Staff Years	6.5	3.5	1.5	1.5	1.5
b) Other costs	25	15	5	5	5

6. Constraints/Conditions/Assumptions:

Significant additional resources will be required in DSC in FY 84, and significant staff time will be required from key data owners. The Agency data coordinator and DSC's Data Administrator will lead the project. This also assumed that "Database Manager" or equivalent positions are developed in appropriate Branches within the Divisions.

7. Responsibilities:

    a. Initiated: _____   _____
                                          (title)   (date)

    b. Approved: _____   _____
                                          (title)   (date)

Objective 83-007: FILE MANAGEMENT/DATA DOCUMENTATION

1. Objective Statement: To improve file management and develop standards
                           for data documentation by May 1985.

2. Background: This objective supports the Agency's goal of
                           increasing productivity through more efficient use
                           of its information resources. Currently the
                           Agency has little file or data documentation that
                           can stand alone, and there is confusion over what
                           data the Agency maintains and has available.
                           Significant Agency resources are lost through
                           inefficient file management, and this loss is
                           especially critical in the area of its large tape
                           and disk files. This objective is closely related
                           to Objectives 83-006, 83-001, and 83-008.

3. Approach: Data documentation standards shall be developed
                           through an interactive process involving both
                           program and data processing staff. Interactive
                           automated tools will be developed to help the
                           process whenever possible. A file management
                           system will be developed using a pilot project
                           within one Division. If successful, it will be
                           implemented on internally maintained files.

4. Milestones:

	Start Date	Completion Date	Responsible Parties
Develop Data Documentation Standards for Review	NOV 83	JUN 84	DSC
Review and Revise Standards	JUN 84	JAN 85	OA, All Divisions
Develop Automated Aids Support Documentation Efforts	JAN 85	MAY 85	DSC
Issue Guidance to Agency Staff and and Implement Organization Steps to Support Standards	SEPT 84	MAY 85	OA, ADP Policy Committee
Develop Pilot File Management System	SEPT 83	MAY 84	DSC, EDD

Review, Revise, and
Extend System to
Entire Agency   MAY 84   OCT 84   DSC, All Divisions

Document System
and Train Selected
Division Staff in
Use   JULY 84   JAN 85   DSC

5. Resource Requirements:

FY	FY 84	FY 85	FY 86	FY 87	FY 88
a) Staff Years	2.5	1.5	0	0	0
b) Other costs	20	40	0	0	0

6. Constraints/Conditions/Assumptions:

7. Responsibilities:

    a. Initiated: _____   _____
                            (title)   (date)

    b. Approved: _____   _____
                            (title)   (date)

Objective 83-008: DATA ACQUISITION AND SHARING

1. Objective Statement: To improve the acquisition and collection of data
                            from sources external to ERS and to achieve
                            effective sharing of this data within ERS by
                            September 1985.

2. Background: This objective supports the Agency's goal to
                            improve capabilities and coordination in the areas
                            of data acquisition and subsequent sharing. ERS
                            spends considerable resources to acquire data from
                            Agencies both outside and inside USDA (e.g.,
                            Census Bureau, Bureau of Economic Analysis, Food
                            and Agriculture Organization, Soil Conservation
                            Service, Statistical Reporting Service, Foreign
                            Agriculture Service, etc.). Often these data are
                            acquired for only one application, and as a result
                            much potentially useful data for other
                            applications are not being identified and made
                            available to other researchers. Further, much
                            data, especially from sources within USDA, do not
                            come to ERS in an automated form and must be
                            rekeyed. Cooperative efforts are underway to
                            eliminate these inefficiencies. This objective is
                            closely related to Objective 83-006.

3. Approach: As mentioned in Objective 83-006, the Agency will
                            identify general categories of data which are
                            necessary to the Agency mission. Potential
                            sources for these data will be identified, and
                            these sources will be contacted and mechanisms
                            developed by the Agency in conjunction with OIRM
                            to improve future acquisition. Emphasis will be
                            on coordination and automation of the data
                            acquisition process. Procedures will be
                            documented and implemented. Staff will be
                            provided with procedures to determine what data
                            are available to them.

4. Milestones:

	Start Date	Completion Date	Responsible Parties
Identify opportunities for improvement in data sharing	OCT 83	JUN 84	ERS Data Coordinator, DSC, OIRM
Develop standards for interchange of data with agencies	JAN 84	SEPT 84	ERS Data Coordinator, DSC, OIRM

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           If needed, acquire new
           technology to improve
           data communication
           and acquisition         OCT 84            SEPT 85          DSC

           Facilitate the
           process                 OCT 84            SEPT 85          OIRM
```

5. Resource Requirements:

		FY 84	FY 85	FY 86	FY 87	FY 88
a)	Staff years	0.5	2.0	0.5	0.5	0.5
b)	Other costs	10	10	10	10	10

6. Constraints/Conditions/Assumptions:

> Decisions with respect to this objective may
> affect the schedule under objective 83-011.

7. Responsibilities:

a. Initiated: _____   _____
                      (title)   (date)

b. Approved: _____   _____
                     (title)   (date)

<u>Objective 83-009</u>: CROSS-SECTIONAL AND HIERARCHICAL DATA

1. <u>Objective Statement</u>:   To investigate alternatives for improving the collection, storage, and analysis of cross-sectional and hierarchical data in ERS by May 1985.

2. <u>Background</u>:   This objective supports the Agency's goal to increase productivity and program effectiveness through improvements in the handling of cross-sectional and hierarchical data. The Agency is completing the development of an extensive reworking of its time series database. Significant portions of the Agency's research and staff mission depend on acquiring and using cross-sectional and/or hierarchical data and serious deficiencies in the acquiring and management of these data have been identified. This objective is closely related to Objectives 83-006, 83-007, and 83-008 and provides needed input into Objective and 83-005 83-011.

3. <u>Approach</u>:   An analysis of the Agency's needs for cross-sectional and hierarchical data has begun, and will continue, with emphasis being placed on improving file management (83-007), alternative methods of processing (83-011), and documentation for the directory (83-006). In addition, efforts to coordinate the development of a nationally consistent natural resource database will continue. Once the requirements have been identified, a variety of database and file management packages will be examined to identify potential areas for improvements.

4. <u>Milestones</u>:

	Start Date	Completion Date	Responsible Parties
Data requirements analysis	JAN 84	MAY 84	Divisions, DSC, Data Coordinator
Identify and evaluate systems	JUN 84	JUNE 85	DSC, Some Divisions

5. Resource Requirements:

		FY 84	FY 85	FY 86	FY 87	FY 88
a)	Staff years	1.5	1.5			
b)	Other costs	-	-			

6. Constraints/Conditions/Assumptions:

7. Responsibilities:

a. Initiated: _____   _____
                        (title)   (date)

b. Approved: _____   _____
                        (title)   (date)

Objective 83-010: QUALITY CONTROL PROGRAM

1. Objective Statement: To develop a quality control program to assess the quality of information sources, processes and outputs by January 1987.

2. Background: This objective supports the Agency's goal to provide improved user services in terms of quality. Firm guidelines regarding minimal accepted reliability of data and other forms of information need to be established across the entire Agency. The Quality Control Program should encompass the acquisition of data from primary and secondary sources; the processing of data including the current accuracy and integrity of databases; and the dissemination of information outside of the Agency. Part of the effort will deal with means to expedite or streamline the output review process without diminishing the quality of the product's content.

3. Approach: Based on general format and content requirements for Quality Control Programs, ERS will develop Quality Controls for use throughout the Agency with respect to information processing and management. A manual will address policies and specific procedures. The intent will be to implement the program in an incremental manner. The basic guidelines will be issued indicating the ultimate content of the program and sections will be added as they become available.

4. Milestones:

	Start Date	Completion Date	Responsible Parties
Determine Agency's policy and guidelines on minimum acceptable reliability of ERS information	OCT 83	JAN 84	OA, DSC All Divisions
Explore ways to stream-line the publications review process without degradation of quality	DEC 83	FEB 84	EMS, OA

Develop an outline of the content for an ERS Quality Control Guidelines Manual	MAR 84	MAY 84	EMS, DSC
Develop guidelines for the acquisition of primary source survey data to assure quality and adequacy of end product	NOV 83	AUG 84	OA, All Divisions
Develop guidelines for the acquisition and use of secondary source data and information	JAN 84	AUG 84	OA, All Divisions
Issue ERS Quality Control Guidelines Manual with partial contents	SEPT 84	DEC 84	EMS, DSC All Divisions
Develop quality assurance guidelines for publications	JAN 85	MAR 85	EMS, All Divisions
Develop quality assurance guidelines for electronic dissemination of ERS data and information to the public and other users	APR 85	SEPT 85	EMS, DSC
Issue a second increment of the ERS Quality Control Guidelines Manual	OCT 85	DEC 85	EMS, DSC All Divisions
Issue the third and final increment of the ERS Quality Control Guidelines Manual	OCT 86	JAN 87	EMS, DSC All Divisions

5. Resource Requirements:

FY	FY 84	FY 85	FY 86	FY 87	FY 88
a) Staff years	1	1	1	1	
b) Other costs		15	10	25	

6. Constraints/Conditions/Assumptions:

7. Responsibilities:

    a. Initiated: _____   _____
                              (title)   (date)

    b. Approved: _____   _____
                              (title)   (date)

Objective 83-011: COMPUTER SYSTEM CONFIGURATION

1. Objective Statement: To improve the existing internal and external
computer system configuration available to ERS by
September 1985.

2. Background: This objective supports the Agency's goal to
increase productivity and to improve the
effectiveness of its information management
programs. In particular the objective seeks to
find high quality, lower cost alternatives to
present information processing methods. ERS
presently makes use of the Washington Computer
Center (WCC) for its processing requirements.
Rising costs, lack of total responsiveness, lost
data., etc., indicate other alternatives should be
explored.

Further, the introduction of new technology and,
specifically, microcomputer systems indicate that
internal computer resources need to be examined
periodically. This objective is related to
Objective 83-012, 83-001, 83-009, 83-002, 83-014,
and 83-018.

3. Approach: Two basic approaches will be undertaken in
pursuing this objective. First, a detailed
analysis of current and near term computer
requirements will be conducted along with an
evaluation on how well current systems and
services are meeting those needs. Secondly other
alternatives to using WCC, including both internal
and external sources, will be evaluated based upon
services offered, performance and cost. A phased
decision process will be followed to determine to
what extent WCC will be utilized by ERS or if some
other alternative will be implemented.

4. Milestones:

	Start Date	Completion Date	Responsible Parties
Gather and analyze current and near term computer system requirements	OCT 83	MAY 84	All Divisions
Inventory all ERS computer resources	OCT 83	DEC 83	DSC

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Investigate compatibility of existing resources	JAN 84	FEB 84	All Divisions
Obtain a detailed description of WCC capabilities, capacity, pricing structure and current ERS usage. Specifically, define application programs, equipment, protocols, tape formats and specifications, etc.	OCT 83	JAN 84	DSC
Collect information on alternatives to WCC including NIH, private computer services and in-house capabilities for comparison	OCT 83	MAR 84	DSC
Conduct comparative analyses (including cost/ benefit trade-offs) of alternatives	MAR 84	MAY 84	DSC
Submit report of findings to IM Planning Committee for endorsement and the Administrator's action	MAY 84	MAY 84	All Divisions
Develop basic system configuration design for ERS computer resources for future years	MAY 84	AUG 84	DSC, All Divisions
Determine ERS hardware and software shortfalls compared to basic configuration design for ERS	JULY 84	AUG 84	All Divisions
Establish generic computer hardware and software specifications to ensure compatibility and overall system performance	AUG 84	SEPT 84	DSC, All Divisions
Commence phased acquisition program to meet identified computer resource requirements	OCT 84	SEPT 85	All Divisions

If alternative(s) other than
WCC is selected, develop
detailed specifications to
permit implementation of
decision   JUN 84   SEPT 84   DSC

Acquire and commence
conversion to new external
computer resource
services   OCT 84   SEPT 85   DSC

5. <u>Resource Requirements</u>:

		FY 84	FY 85	FY 86	FY 87	FY 88
a)	Staff Years	5	3			
b)	Other Costs	410	400	–	–	–

6. <u>Constraints/Conditions/Assumptions</u>:

It is assumed that if the analysis demonstrates that
in-house computer resources are shown as most
effective to meet ERS needs, that the Office of
Information Resource Management will endorse upgrading
existing ERS computer resources for this purpose. The
estimate of resource requirements assumes that other
alternatives to WCC will prove more cost-effective and
efficient. The other costs shown for FY 84 are to
obtain contractor support in conducting the described
analysis ($40K), to procure microcomputers ($200K) and
to buyout the lease on the IBM 4331 ($170K). Because
the outcome of the analysis is unknown, estimates of
other costs for FY 85 and beyond are subject to major
revision.

7. <u>Responsibilities</u>:

a. Initiated: _____   _____
                                  (title)   (date)

b. Approved: _____   _____
                                  (title)   (date)

<u>Objective 83-Ø12</u>:   INTEGRATED WORKSTATION ACCESS

1. <u>Objective Statement</u>:   To provide full access to integrated workstations
for Agency researchers and support staff by May
1987.

2. <u>Background</u>:   This objective supports the Agency's goals to
provide improved user services and to improve
capabilities and coordination through integration
of functions. Recent software developments permit
the integration of word processing, database
management, data processing and graphics
functions. Initial indications suggest integrated
application programs will make the user's work
much simpler and more responsive to needs. There
is a need to evaluate the various software
integrated application packages for performance,
cost and applicability to existing hardware in
order to determine future acquisitions.

3. <u>Approach</u>:   A search will be made for existing integrated
application programs available for use with the
present hardware configuration at ERS. An
evaluation will be made based on performance,
cost, user comments and actual demonstrations in
the ERS environment. Results will be reflected in
subsequent ERS information management acquisition
policies.

4. <u>Milestones</u>:

	Start Date	Completion Date	Responsible Parties
Utilizing ITC and vendor resources, develop a comprehensive listing of integrated application software available through system vendor or third party source	OCT 83	DEC 83	DSC

Construct a comparison matrix
of integrated software for
each computer system now in
use at ERS or under procurement.
Include information on
cost, ease of use, quality
of documentation, training
availability, special features,
hardware requirements, basic
operations available,
etc.   JAN 84   FEB 84   All Divisions

If not already in use within
ERS, procure alternative
integrated application packages
for each system for
evaluation purposes   MAR 84   JULY 84   Selected Divisions

Conduct evaluations   AUG 84   JULY 85   All Divisions

Analyze results of
evaluations; determine
which should be adopted as
standard integrated
applications packages   AUG 85   SEPT 85   All Divisions

Determine if any one
integrated software package
far exceeds others to warrant
consideration of standardization
throughout ERS, taking into
consideration the possible
need to replace
hardware   OCT 85   DEC 85   All Divisions

Implement decisions as
the result of analysis
and evaluations   JAN 86   MAY 87   All Divisions

5. Resource Requirements:

		FY 84	FY 85	FY 86	FY 87	FY 88
a)	Staff Years	0.5	0.5	0.5		
b)	Other Costs	10		25	25	–

6. Constraints/Conditions/Assumptions:

                Possible decisions, resulting from objective
                83-012 could affect the action taken for this
                objective. In specifying costs, it is assumed
                that licensing requirements will require buying an
                integrated software package for each system where
                it will be installed at an average cost of $1,000
                per package.

7. Responsibilities:

    a. Initiated: _____   _____
                    (title)   (date)

    b. Approved: _____   _____
                    (title)   (date)

Objective 83-013: NEW OFFICE REQUIREMENTS

1. **Objective Statement:**   To identify information management requirements
(e.g., computer room environment room
specifications, minimum functional work areas,
security requirements, electrical power
specifications, provisions for Local Area Network
capabilities, etc.) for new office spaces and to
plan and manage the relocation of equipment and
systems by August 1984.

2. **Background:**   This objective supports the Agency's goal to
improve capabilities and coordination. The
decision has been made and approved by USDA to
relocate ERS during FY 1984. The exact location
and facility are not known at this time.
Regardless of choice, it is necessary to define
information management requirements to accommodate
facilities planning and to assure the building
effectively provides for IM equipment, systems,
etc. If not readily defined prior to
consideration of alternative sites, the IM
requirements will serve to identify what
improvements will be needed prior to occupancy.

3. **Approach:**   The Data Services Center will coordinate input
from other organizational elements within ERS to
define physical requirements and arrangements
within the new facility. Requirements will be
forwarded to the Relocation Task Force. The
schedule for input will be dependent upon the Task
Force's needs in planning the proposed move.

4. **Milestones:**

	Start Date	Completion Date	Responsible Parties
Determine information management work space (e.g., reproduction, computer workstation, files, etc.), telephone, telecommunication and other requirements for organizational element.	SEPT 83	NOV 84	All Divisions, DSC, EMS

Collect input, resolve
any issues and make
input to authority
responsible for new
facility selection.   DEC 83   JAN 84   EMS, All Divisions

Assure new facility
planning provides for
IM needs including space,
adjacency require-
ments, electric
power, etc.   JAN 84   JUN 84   RTF

Review new facility
floor layouts, services,
etc., to assure IM
requirements will be
met prior to
relocation.   APR 84   Relocation   EMS

5. Resource Requirements:

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
a. Staff Years	1	0.3			
b. Other Costs (1,000 $)	(see paragraph 6 below)				

6. Constraints/Conditions/Assumptions:

It is assumed that a Relocation Task Force (RTF)
will be organized to facilitate planning the
relocation and to oversee the actual details for
the relocation itself. It is also assumed that
EMS will have membership on the RTF to represent
IM input to the process and to assure adequate
provisions are made for required computer
installations including the possible inclusion of
a Local Area Network throughout the new ERS
spaces. Other costs are not identified under this
plan since all relocation costs are expected to be
budgeted and funded separately.

7. Responsibilities:

a. Initiated: _____   _____
                        (title)   (date)

b. Approved: _____   _____
                        (title)   (date)

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Objective 83-014: SUPPORT TO FIELD ASSIGNMENTS

1. **Objective Statement:** To provide linked information services in support of proposed field assignments by January 1986.

2. **Background:** This objective is in support of improved productivity and effectiveness through provision of distributed information systems for field assignments. The objective also supports a long range planning goal of ERS to bring its current field staff to Washington, then develop temporary field assignments. In recent years, little or no computer services were provided to field staff from Washington, so that these researchers did not have full access to the ERS data and information base. Further, models and data developed in field locations were often maintained on machines in a format incompatible with ERS' center computers. Considerable difficulties and inefficiencies in transferring this information made communication and joint work more difficult. This objective is supported by objectives 83-006, 83-007, and 83-009 and makes input to Objective 83-011.

3. **Approach:** Several task forces in ERS are working on the development of Agency standards in the areas of models, data, and the development of software, and these will be extended to the existing and future field staff. As each new field assignment is developed, an information requirements analysis will be performed. This will include the consideration of using alternate field computer sites, linked to Washington via TELENET, as well as the provision of appropriate micro- or mini-systems. Information production will be integrated into the ERS information base. A feedback mechanism will be created to assure cooperation with research and data processing staffs. Each field assignment will also include a plan for two-way information transmission between ERS staff in Washington and staff assigned to field locations. Whenever possible and desirable, other Departmental resources in the areas of electronic mail, teleconferencing, etc., will be utilized.

4. <u>Milestones</u>:

	Start Date	Completion Date	Responsible Parties
Identify hardware and software requirements for field assignment personnel	JAN 84	MAY 84	Divisions staff assigned to field locations, DSC
Prepare guidance on procedures to loan systems in conjunction with field assignments	JUN 84	JULY 84	All Divisions, DSC
Procure necessary hardware and systems	AUG 84	MAR 85	All Divisions, DSC
Install field systems as staff are assigned	APR 85	JAN 86 (and continuing thereafter)	All Divisions

5. <u>Resource Requirements</u>:

FY	FY 84	FY 85	FY 86	FY 87	FY 88
a) Staff years	0.5	0.5			
b) Other costs	25	25			

6. <u>Constraints/Conditions/Assumptions</u>:

Compatibility and mobility would be required to utilize the equipment after the assignment is terminated.

7. <u>Responsibilities:</u>

a. Initiated: _____   _____
 (title)   (date)

b. Approved: _____   _____
 (title)   (date)

Objective 83-015: ELECTRONIC DISSEMINATION

1. Objective Statement: To develop the Agency's plan for electronic
                             dissemination of information and to implement it
                             by January 1987.

2. Background: This objective supports the Agency's goals of
                             providing improved user services, and furthers
                             USDA's goals in this area. ERS has always had as
                             an important part of its mission providing timely
                             information to public and private decisionmakers.
                             The need to reduce publication costs and the
                             advances in telecommunications have lead to both
                             Department and Agency initiatives in this area.
                             This objective is related to and supported by
                             Objectives 83-001, 83-005, 83-006, and 83-008 and
                             provides input for Objective 83-011.

3. Approach: An analysis of the information needs of the users
                             of the Agency's information will be coordinated to
                             define dissemination requirements. Several policy
                             issues at both the Agency and the Departmental
                             level will need to be resolved, and any planning
                             will need to be cognizant of developments in this
                             area. Emphasis will be placed on covering the
                             broadest possible spectrum, and providing easy
                             electronic access to Agency data and publications.
                             A phased approach will be used, starting with
                             limited access to key data series. A pilot
                             project is underway and more may be added. Among
                             the first candidates for electronic dissemination
                             are the Agency's situation and outlook reports,
                             publication abstracts, and selected data series.

4. Milestones:

	Start Date	Completion Date	Responsible Parties
Requirements analysis	JAN 84	MAY 84	Data Coordinator, DSC, EMS
Formulate Agency policy	APR 84	JAN 85	Data Coordinator, All Divisions, EMS
Procure additional pilot project system(s), if required	AUG 84	DEC 84	DSC, Selected Divisions
Evaluate Pilot project(s)	JAN 85	JAN 86	DSC, EMS Selected Divisions

Implement electronic dissemination of information	JAN 86		JAN 87	All Divisions, EMS

5. Resource Requirements:

FY	FY 84	FY 85	FY 86	FY 87	FY 88
a) Staff years	3	2	2	2	
b) Other costs	50	40	40	50	

6. Constraints/Conditions/Assumptions:

The USDA is preparing an RFI and RFP for a uniform Electronic Dissemination of Information system. USDA policy and this proposed system will seriously affect the manner in which the Agency may proceed. Costs of the pilot project may vary from $20-100K. Costs for this objective may be combined with costs for Objective 83-016.

7. Responsibilities:

a. Initiated: _____   _____
(title)   (date)

b. Approved: _____   _____
(title)   (date)

Objective 83-016: INTEGRATED PUBLICATIONS PROCESS

1. Objective Statement: To develop and implement an integrated
                            publications process by January 1987.

2. Background: This objective supports three of the Agency's
                            goals: 1) to increase productivity and improve
                            program effectiveness; 2) to provide improved user
                            services; and 3) to improve capabilities and
                            coordination.

                            A significant portion of ERS information is
                            disseminated by means of various publications such
                            as Outlook & Situation Reports, World Agriculture
                            Regional Summaries, Agriculture Outlook, Economic
                            Indicators, Farmline, Foreign Agricultural Trade
                            of the U.S., National Food Review, etc.

                            The present method of preparing manuscripts,
                            illustrating text, and preparing camera-ready copy
                            consists of many steps involving several
                            organizational elements (including some outside of
                            ERS). Recent advances made in automated
                            publication processes warrant serious
                            investigation. The purpose of this objective,
                            therefore, is to take advantage of new technology,
                            improve efficiency of the products of ERS and to
                            increase the efficiency of the process.

3. Approach: A feasibility study will be conducted which will
                            include, but not be limited to, documenting the
                            exact process and associated cost of the present
                            method, examination of existing integrated
                            (automated) publication systems, and a
                            cost/benefit analysis of a proposed system or
                            process for ERS. If the study concludes such a
                            system is feasible based on projected publications
                            activity in the next several years, a capital
                            investment project request will be formulated.
                            Upon approval, a set of detailed specifications
                            will be developed.

4. Milestones:

	Start Date	Completion Date	Responsible Parties
Perform a methods analysis of the existing publications process	JUN 84	JULY 84	EMS

Investigate publication processes used within other Government Agencies and private industry	AUG 84	SEPT 84	EMS
Determine the potential quantity and type of publications expected to be produced over the next ten year period	SEPT 84	OCT 84	EMS, All Divisions
Develop a comparative analysis based upon the Kepner-Tregoe technique to determine process best suited for ERS needs	NOV 84	JAN 85	EMS, All Divisions
Prepare a report of findings and recommendations including a cost/benefits analysis	FEB 85	MAR 85	EMS
If approved, input resource requirements into budget for succeeding budget years	MAR 85	APR 85	EMS
Procure new equipment for the improved publications process	NOV 85	APR 86	EMS
Implement the new process gradually until all ERS publications are produced under the new system	MAY 86	JAN 87	OA, EMS All Divisions

5. <u>Resource Requirements</u>:

FY	FY 84	FY 85	FY 86	FY 87	FY 88
a) Staff years	0.8	1.5	2	1	
b) Other costs	20	50	100	25	

6. <u>Constraints/Conditions/Assumptions</u>:

It is assumed that, if an integrated system is feasible, Departmental and other required approvals will be forthcoming.

7. <u>Responsibilities:</u>

    a. Initiated: _____   _____
                                  (title)   (date)

    b. Approved: _____   _____
                                  (title)   (date)

<u>Objective 83-017</u>: AUTOMATED GRAPHICS

1. <u>Objective Statement</u>:   To identify requirements and to acquire suitable
                                   hardware and software for an automated
                                   presentation and publications-quality graphics
                                   system by December 1985.

2. <u>Background</u>:   This objective supports the Agency's goals to
                                   provide improved user services in terms of
                                   responsiveness and quality and to improve
                                   capabilities through automation. The introduction
                                   of microcomputer systems throughout ERS and the
                                   availability of numerous graphics software
                                   packages will provide the opportunity to improve
                                   the quality of the graphics (particularly tabular
                                   data) used in reports generated by ERS Divisions.
                                   Because an integrated publications process is
                                   planned (Objective 83-016), care must be taken to
                                   select automated graphics systems that will be
                                   compatible with the overall publication process.
                                   Issues involve: availability of graphics
                                   software, capabilities of various software
                                   packages; ability to integrate into the eventual
                                   integrated publication process; and lifecycle
                                   costs; and the degree of decentralized graphics
                                   preparation that is feasible and economical.

                                   This objective is related to Objectives 83-012,
                                   83-015, 83-016, and 83-018.

3. <u>Approach</u>:   Prepare a study that identifies available graphics
                                   software for existing and anticipated use by ERS.
                                   Determine characteristics required for each ERS
                                   application. Perform a comparative analysis of
                                   each graphics package against weighted criteria.
                                   Select one or more systems for trial usage to
                                   assure acceptability. Develop graphics standards
                                   to assure sufficient uniformity and compatibility
                                   for the integrated publication process. Procure
                                   graphics software and necessary hardware
                                   peripherals.

4. <u>Milestones</u>:

	Start Date	Completion Date	Responsible Parties
Determine characteristics required by each ERS application	JAN 84	MAR 84	All Divisions

Develop graphics standards to assure sufficient uniformity and compatibility for the integrated publications process	APR 84	AUG 84	EMS
Conduct a survey of all available graphics software for existing and contemplated work-stations	JAN 84	MAR 84	DSC, EMS
Evaluate existing graphics packages in use by various Branches; perform a comparative analysis against weighted criteria	APR 84	AUG 84	EMS, DSC
Procure graphics software and peripherals to meet the identified needs	JAN 85	DEC 85	All Divisions, EMS

5. Resource Requirements:

FY	FY 84	FY 85	FY 86	FY 87	FY 88
a) Staff years	2	2	0.5		
b) Other costs		160			

6. Constraints/Conditions/Assumptions:

It is assumed that Departmental criteria for
publications quality can be satisfied and will be
complementary with automatic graphics systems.

7. Responsibilities:

a. Initiated: _____   _____
                         (title)   (date)

b. Approved: _____   _____
                         (title)   (date)

Objective 83-018: INFORMATION ACCESS

1. Objective Statement: To provide interactive electronics information access (e.g., database query capabilities, analytical processing, decision support, graphics, electronic mail, etc.) to the Agency's information base by July 1988.

2. Background: This objective supports the Agency's goal of improving capabilities and coordination through automation, integration and interactive systems. It is recognized that ERS staff have additional demands for rapid access to accurate and current ERS information. For example, senior staff are frequently required to provide salient information, after normal work hours and without benefit of advance notification, to USDA, the Administration and Congress. The purpose of this objective is to provide staff with effective tools that can take full advantage of developing systems such as improved integrated MIS (Objective 83-012), automated graphics (Objective 83-017), and electronic dissemination (Objective 83-015).

3. Approach: Determine what capabilities are required to effectively meet requirements for rapid access to ERS information. Make new capabilities available as they are developed under the auspices of other objectives.

4. Milestones:

	Start Date	Completion Date	Responsible Parties
Determine functional requirements	JAN 84	MAY 84	OA, DSC, EMS
Procure and install workstations for selected key staff	JUN 84	DEC 84	OA, DSC

```
Link key staff to pilot databases
and systems (e.g., Outlook
and Situation database,
graphics, etc.) and
evaluate                    JAN 85              DEC 85          OA, DSC

Progressively add
capabilities and additional
staff as required           JAN 85              JULY 88         OA, DSC
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5. Resource Requirements:

FY	FY 84	FY 85	FY 86	FY 87	FY 88
a) Staff years	0.5	0.8	0.5	0.5	0.5
b) Other costs	30	30	20	20	20

6. Constraints/Conditions/Assumptions:

It is assumed that Division information can be
electronically aggregated and follow a unified MIS
system.

7. Responsibilities:

a. Initiated: _____   _____
                        (title)   (date)

b. Approved: _____   _____
                        (title)   (date)

APPENDIX

Summary of the Five Year Plan - Year by Year

FY84:

1.   Identity and organize ERS requirements for data, database, publications, data/word processing, management information, and computer system configuration for Washington staff and field assignments.

2.   Identify word processing and database policy issues, resolve those needing resolution, and issue policy guidelines.

3.   Complete conversion of time series data to ARIES.

4.   Do a comparative analysis of continued WCC services and alternatives. Prepare a decision paper giving approved choices and rationalization.

5.   Begin pilot acquisition of integrated workstation software/hardware systems for use by selected ERS staff.

6.   Begin identification of cross-sectional/hierarchical data requirements.

7.   Develop classification scheme for Agency data and begin development of automated directory.

8.   Develop pilot File Management System for EDD; if successful, extend to all of ERS.

9.   Develop data documentation standards for all Agency data.

10.   Begin identifying opportunities and procedures to improve data acquisition.

11.   Formulate Agency policy for electronic dissemination of information, and begin developing a pilot system.

12.   Review existing graphics packages and perform a comparative analysis.

13.   Develop, test, and install an automated contracts and budget records management system, and evaluate for future modifications.

14.   Determine other MIS needs of ERS, and develop specifications to meet the requirements of individual Divisions and the Administrator's office.

15.   Identify IM requirements for new office space and plan and manage the relocation of equipment and system.

16.   Install integrated workstations for selected key staff.

17.   Develop a comprehensive training program for all levels of ERS staff.

18. Create an information management planning group to oversee FY84 plan implementation.

19. Prepare FY85-89 five year IM plan.

20. Develop an Agency policy on minimum acceptable quality of ERS data and information, and develop the outline of a quality control manual.

FY85:

1. Continue phased acquisition program to meet identified internal computer system resource requirements.

2. If alternative other than WCC is selected for mainframe services, acquire and commence conversion to new external computer system configuration. If WCC selected, clarify requirements to WCC and set criteria for level of services.

3. Evaluate pilot purchase of integrated workstation system.

4. Acquire and/or develop improved database management software for improved ARIES capabilities.

5. Complete automated data directory, and train users.

6. Implement data documentation standards through user training and documentation aids.

7. Complete File Management System, and train users.

8. Work jointly with OIRM and other Agencies in implementing improved data acquisition policies.

9. Perform comparative analysis of alternatives to manage Agencies cross-sectional and hierarchical data resources.

10. Conduct and evaluate pilot projects for electronic dissemination of information.

11. Complete modifications to Automated Administrative record keeping systems (IFCS, CASS, PERS).

12. Begin development of generalized MIS system.

13. Complete move to new facilities.

14. Provide necessary computer systems for first field assignments.

15. Conduct a comparative analysis of alternative publication systems.

16. Begin procurement of new graphics systems, as required.

17.   Link selected staff to pilot databases and systems (e.g., Outlook and Situation database, graphics).

18.   Implement comprehensive training plan.

19.   Produce FY86-90 five year IM plan.

20.   Issue first version of ERS Quality Control Guidelines Manual, and develop guidelines for publicly accessible data and information.

FY86:

1.   Prepare guidelines and begin purchases of integrated workstations.

2.   Develop additional capabilities for ARIES.

3.   Finish pilot projects for electronic dissemination, evaluate and begin to implement Agency policy.

4.   Complete development of Agency MIS system, and begin to train managers in its use.

5.   Install field systems as staff are assigned.

6.   Procure new equipment for the improved publications process.

7.   Complete procurement of new graphics systems.

8.   Add new capabilities to staff workstations.

9.   Develop FY87-91 Information Management Plan.

10.   Develop second version of ERS Quality Control Manual.

FY87:

1.   Complete procurement of Agency integrated workstations.

2.   Continue development of ARIES.

3.   Begin to load any other data identified to go into ARIES.

4.   Finish implementation of electronic dissemination policy.

5.   Produce all ERS publications using new workstations.

7.   Issue final version of ERS Quality Control Manual.

8.   Prepare FY88-92 Information Management Plan.

<u>FY88</u>:

1. Complete development of ARIES.

2. Begin final loading of all data identified to go into ARIES.

3. Complete development of Information Access System.

4. Prepare FY89-93 Information Management Plan.

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